Nutrition News

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Role of Calories in Protein Utilization During Pregnancy

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Relatively large amounts of protein are recommended for pregnant women. The developing fetus and accessory structures require an amount of nitrogen equivalent to approximately ten pounds of body tissue. The sources of this nitrogen are the protein-containing foods in the diet and/or the maternal tissues. If maternal tissues furnish the nitrogen and are thereby depleted, the mother is less able to withstand the stresses of pregnancy, parturition, and lactation. Therefore, every effort should be made to provide sufficient nitrogen from dietary protein. If a quart of milk, at least one egg, and two generous servings of other protein-rich foods, as lean meat, fish, cheese, or beans, are included in the diet daily, adequacy of dietary protein should be assured.

The manner in which the protein is utilized, however, is as important as the amount of protein provided. The nitrogenous portion of protein is retained and utilized for building new tissue only when the diet contains sufficient calories as carbohydrate and fat to supply the energy requirements. Otherwise, protein is used for energy and the nitrogenous portion is excreted. The assumption cannot be made that nitrogen is being retained by a pregnant woman merely because the diet is high in protein.

Nitrogen Retention

In a study of nutritional requirements during pregnancy, 17 women, living in their own homes on self-selected diets, served as subjects for seven day periods during each of the last four or five months of pregnancy. Most of them were patients at the Chicago Lying-in Hospital. No special attempt was made to influence their diets. Nitrogen balances were determined by analyses of all food eaten and of all excreta.

Only three of the 17 women were retaining nitrogen. Furthermore, the amounts of nitrogen lost or retained showed little or no relationship to the amount of protein in the diets except in the case of one woman who was losing large amounts of nitrogen on the extremely low protein intake of 13 grams. Daily protein intake of seven of these women ranged from 29 to 59 grams; that of the other nine women, from 60 to 82 grams. The average daily caloric intake of ten of the women was less than 2000 and the caloric intake of only one was in excess of 2200.

Relation of Calories

To ascertain whether the lack of nitrogen retention by these women was due to low caloric intakes, the results were compared with published results obtained by others in earlier studies on pregnant women.

In these earlier studies, 21 women chiefly on self-selected diets were, almost without exception, retaining significant amounts of nitrogen. The statement was made that, under favorable circumstances, the reproductive cycle is a period of nitrogen acquisition for the mother, in that an excess of nitrogen beyond that required for the fetus and its adnexa is retained.

The protein intakes of these women, who retained significant amounts of nitrogen, were in many cases no greater than those of the 17 who retained little or lost nitrogen. On the other hand, the caloric intakes were considerably higher.

The results of the combined studies showed that, for these 38 women, the amount of nitrogen retained was more dependent on the caloric than on the nitrogen intakes. On the average, more than twice as much nitrogen was retained by women on diets containing 50 grams of protein and over 2100 calories as by those on diets containing 70 grams of protein but less than 2100 calories. When caloric intakes were

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2250 or more, significant amounts of nitrogen were consistently retained by all but two women, both of whom were larger than average.

The question as to how many calories should be allowed in order to insure nitrogen retention by the mother, in an amount equivalent to that required for the fetus and its adnexa, and at the same time to prevent excessive weight gains during pregnancy is not a simple one. The conventional method of determining this by following weight changes leaves much to be desired. It is increasingly evident that the amount of water retained varies with the individual. The scales cannot distinguish between a pound of water and a pound of tissue. It is quite possible that some women on restricted food intakes are, in reality, losing body tissue although the scales register weight gains.

Until a suitable method is developed for the determination of the body composition of pregnant women, recommendations for caloric intake should, if possible, be made on the individual basis and will, of necessity, depend on the combined judgment of the ostetrician and the clinic nutritionist.

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Glances AT NUTRITION RESEARCH

The influence of other nutrients upon calcium utilization has long been recognized. New information is constantly obtained in the search to improve human utilization of this important mineral which has such limited distribution in foods other than milk and its products.

Butterfat and Calcium Utilization — Presence or absence of butterfat in the diet does not appear to influence utilization of dietary calcium by adult men. This conclusion was drawn from calcium metabolism studies for which 13 adult men between the ages of 19 and 44 years served as subjects. The butterfat content of the test diets varied from 1 to 32 percent on a dry weight basis. The calcium intake varied from 2.71 to 10.10 mg. per kilogram of body weight per day. The level of butterfat in the diet did not influence either the amount of calcium retained or the amount excreted in the feces. The results of this study are not necessarily applicable to other fats as the fatty acid composition of butterfat is not duplicated by other common dietary fats.

—J. Nutrition 45:201 (Oct.) 1951

Type of Fat and Calcium Utilization— The kind of fat in the diet influences the utilization of calcium, if present in significant quantity. This was demonstrated by a study in which comparison was made of calcium utilization by twelve trios of rats fed low fat, 20 percent lard, and 20 percent cocoa butter diets. The average calcium utilization was 73.9, 72.1, and 57.6 respectively for the different diets. The difference in calcium utilization between the lard and cocoa butter diets was highly significant.

—J. Nutrition 45:399 (Nov.) 1951

Magnesium, Calcium, and Phosphorus A metabolic relationship exists between magnesium and calcium and between magnesium and phosphorus but does not appear to be as close an association as that between calcium and phosphorus. Using healthy young women as subjects, a study was made of retentions and fecal and urinary excretions of these minerals at different levels of dietary intake. No significant relationship was observed between either calcium or phosphorus intake and fecal excretion of magnesium. However, intake levels of both calcium and phosphorus affected the urinary excretion of magnesium.

—J. Nutrition 45:477 (Dec.) 1951

Calcium and Phosphorus Utilization— Calcium retention is more favorably influenced by a high dietary level of calcium than by elevation of phosphorus intake even though the two minerals are deposited together in bone tissue. A marked and highly significant increase in calcium retention was observed in 17 young college women when their dietary calcium was raised from 0.3 to 1.5 gm. of calcium per day and phosphorus intake was a constant 0.8 gm. per day. A less marked increase in calcium retention resulted when the phosphorus intake was also raised to 1.4 gm. per day. Phosphorus retention was very little affected by either the increase in calcium or in phosphorus.

—J. Nutrition 45:407 (Nov.) 1951

TIMELY TOPICS

Dr. Oldham

Dr. Oldham received her Ph. D. from the University of Chicago where she was on the research and teaching staff of the Department of Home Economics from 1939 until she accepted her present position in 1952. She is a member of the American Institute of Nutrition, American Home Economics Association, American Association for the Advancement of Science, and the Association of Vitamin Chemists.

Nutrition Study

A study of nutrition services at national, state, and local levels is in progress, undertaken by a Subcommittee on Nutrition Practices of the American Public Health Association's Committee on Administrative Practice. It is anticipated that the final outcome will be the development of a Manual of Nutrition Practice to serve as a guide to public health workers. Funds for this project have been made available by the Milbank Memorial Fund, the Nutrition Foundation, Inc., and the Williams-Waterman Fund of the Research Corporation.

School Lunch Fund

The United States Department of Agriculture announced that by midsummer 79 percent of the $83,367,491 appropriated for 1952-53 school lunch program had been apportioned. State allotments are determined by the number of children of school age and the per capita state incomes.

Weight Control Program for Hospital Employees

By Frederick E. Foerster, M.D., Head, Employee's Health Service
Columbia Hospital, Milwaukee

The problem of the obese patient always has been a difficult one. The dangers of surgery on the overweight person, the complications during pregnancy, the higher incidence of diabetes and high blood pressure in obese people are well known facts, but control has not been easy. Interest in this problem has received much greater attention and publicity in recent years. The impetus has come not only from the medical profession but also from overweight individuals themselves. Many of these people have banded together in groups in an attempt to do something about this health hazard.

There is encouraging evidence that the presentation of a sound, sensible medical program of weight reduction will do much to encourage the obese person to lose weight. It also will help to discourage the use of self-administered reducing drugs and diet fads which often have proven to be dangerous.

It has been established by competent medical investigators that an individual gains weight because his energy intake is greater than his energy output. The process of reducing entails the use of a balanced, nutritious diet which will supply less calories, or energy, than the normal requirement. This is the basic principle of all reducing diets. The reasons why an individual eats more than the normal requirement are more complex and not understood completely. However, "endocrine" or "glandular" causes are rare.

Many of the causes of excessive food intake are felt to be emotional ones. These may range from minor emotional maladjustments, anxieties and tensions, to severe psychological states requiring psychiatric treatment. This makes the problem of obesity a very personal one. The mere handing out of a reduction diet by a physician or dietitian is not sufficient to meet the needs of obese persons. They require a careful and thorough medical history and physical examination to help determine the cause of their obesity. They must be aided in gaining insight into their problem. Then a reducing diet can be offered as a specific form of treatment with continued medical supervision and encouragement.

For the past several years a research study has been carried out at Michigan State College. Out of this careful, scientific investigation there has evolved an excellent reduction diet plan composed of everyday foods used by most families. The diet is, of course, properly balanced, but features a higher percentage of protein and fat than is found in most reducing diets. Because common foods are utilized and the extra protein and fat provide a palatable menu, this diet has been accepted with enthusiasm by patients.

An Application

At Columbia Hospital in Milwaukee, Wisconsin, a practical application of this Michigan State College dietary plan was instituted in January, 1952. Thirty overweight employees of the hospital, ranging in age from 19 to 68 years, volunteered to follow this weight reduction program for a period of fifteen weeks. The diet used was a 1400-calorie diet similar to the one developed at Michigan State College. All reductees were given a physical examination, and a goal of 1½ to 2 pounds of weight loss per week was set for each. Weekly conferences were held to discuss individual problems that arose, and to provide further stimulus to those who faltered.

The results of this reduction program were gratifying. Each individual lost weight. Those with the most interest lost the most weight, confirming that an honest desire on the part of the individual to lose weight is basic for successful weight reduction. Group participation helped some who faltered after their initial enthusiasm wore off. All the participants learned new eating habits, became aware of different food values, and realized the health hazards of being overweight.

Weight reduction can be accomplished with relative ease provided adequate and sympathetic medical supervision is combined with a palatable, attractive, and nutritious low-calorie diet. Such a program is, in large part, the answer to the obese person's problem.

Work Experience Helps Youth Develop Attitudes of Responsibility for Physical Well-Being

By Myrtle Hubbard, former Youth Conservation Chairman
Woman's Club, Iowa City, Iowa

Youth want work, real work with pay. In giving our teenagers opportunity to develop self dependence in work experience, the business life of a community, its schools, and homes share in the development of attitudes of personal responsibility in young citizens. These attitudes extend through recognition of the obligation of fair return in work, the personal worth and dignity of the worker, and the freedom of choice of work which our economic system offers. Too, young people learn the true meaning and value of keeping in condition to do a job well, the dollars-and-cents values of good nutrition, healthful living and self responsibility for one's own well-being.

These are a few of the broad outcomes of the Teen-age Employment Service and Work-Experience Program of Iowa City. The community program was started by the Woman's Club, but early became a program of business, schools, employment service, and youth.

The community had fine recreation centers. These are important but are not enough for young people. The boys and girls themselves said, "We want summertime jobs but we don't know how to find them. People won't hire us." Many business men had the attitude, "We just can't depend upon high school students." Others were more willing to be open-minded about giving the boys and girls a chance to "begin."

Training for Work

A survey of high school students showed that a large majority wanted summertime work. They saw the justice of the criticisms of business men. "Why not a basic training course on what an employer has a right to expect of us if he hires us?" they said.

The idea grew. The high schools planned and conducted a "basic training" program for all who wanted help in getting summer jobs. Original skits, demonstrations, discussions, and materials were presented on many subjects,

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DID YOU KNOW ?

—that to lose a pound of body fat you would have to saw wood for 10½ hours, lay 14,731 bricks, or shovel 114,000 pounds of sand?

—that the world production of butter in 1951 is estimated at about 4.1 million tons?

—that the United States has about one dentist for every 2,000 people, while in Burma, China, and Thailand there are more than a million people to every dentist?

—that the calcium of ice cream is as well used by the body as is the calcium of milk?

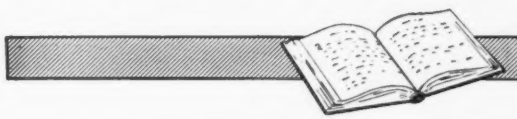
—that following malaria control in Greece, the average gross income of the families in the once-malarious districts practically doubled?

—that according to a summary from the United States Public Health Service in 1950, there was only about one case of milk-borne disease for every two and one-half million people in the United States?

—that in 1951 the United States export of cheese increased about 68 percent over that of 1950?

—that a device has been invented that will break a cow or bull of the habit of butting other animals?

THINGS YOU'LL LIKE TO READ



Understanding Your Child—James L. Hymes, Jr. New York: Prentice-Hall, Inc. 1952. $2.95.

This philosophy on dealing with children is based on four points: children grow; there is a plan to the way they grow; children want things out of life; there is some reason why. Dr. Hymes uses an informal yet informative style that is accentuated by illustrations by H. W. Doremus.

A series of charts suitable for teaching aids developed from various studies of children's diets: **Younger Children Fare Better; Boys Drink More Milk; More Milk Means More Calcium; Boys Get More Calcium; Higher Family Incomes Give Children More Milk, Meat, Fruit, and Vegetables.** Photographic prints are available at cost of: 16″ x 20″, $2.55 each; 8″ x 10″, 55¢ each. Bureau of Human Nutrition and Home Economics, NPS, U. S. Department of Agriculture, Washington 25, D. C.

The Better Half of Your Life—Charles H. Lerrigo, M.D. New York: The John Day Company. 1951. $3.50.

Here is a book that deals in simple and readable terms with the family and social situations arising from the increasing number of older people. Dr. Lerrigo's book is an excellent contribution to the growing field of geriatrics as well as to the layman who is faced in some way with the old age problem.

Reduce and Stay Reduced — Norman Jolliffe, M.D. New York: Simon and Schuster. 1952. $2.95.

In an authoritative answer to fad diets, Dr. Jolliffe suggests the way to attain and maintain proper weight is to regulate the appetite. He includes nutrition advice, specific diets, calorie counts of over 400 common foods, reducing cookery and recipes, basic physiology and mathematics of reducing, and a medical appendix.

Work Experience Helps . . .

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such as how to apply for jobs, conduct on a job, how-to-do-it operations, wages and labor laws, and attitudes for the inexperienced worker.

Proper food and sleep took on new importance to these young people in preparing themselves to feel and look alert in getting and keeping a job. The training course stressed nutrition and other personal habits related to appearance, posture, alertness, and energy. Booklets, films, and other materials on these subjects had new meanings now.

The Woman's Club prepared and distributed a booklet, "How to Win Jobs and Influence Bosses." In it, under the heading, "Things I Wish I Had Known before I Was 21," appeared such signal statements as "That my health after 30 depended in a large degree on what I put in my stomach before I was 21" and "That most things Mother wanted me to do were right."

The youth had shown how serious they were in doing good work. The community accepted the challenge. Space here does not permit the details of the organization. Service clubs, press, radio, every medium of awareness was used. The local state employment office served as a placement center. Each applicant and job was handled with respect. Guidance on the job was given. Each employment record became a permanent record. In a non-industrial town of 30,000 people, 837 boys and girls worked 257,492 hours and earned $162,174 in the summer's work experience program. It continues as a community program.

Back at high school in the fall, these young people talked and wrote of their experiences. Some had found the beginnings of a vocation. Almost all had a new sense of their role in society and their responsibility. Parents spoke of the growth in attitudes, even in such daily ways as sleep and what they ate. The City Council recognized the earnestness and potentials of their youth and appointed youth as ex-officio members. Two teen-agers were invited to sit on the Board of Education as ex-officio members.

If we would influence young people toward self-improvement we must find ways to help them see and discover how what we teach applies to them and their desires.

VOICE